

Inland Fisheries Service

Central Highlands Fish Trap Report

Brown Trout 2022



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Central Highlands Fish Trap Report – Brown Trout 2022

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Introduction

The Inland Fisheries Service (IFS) recognises the value of maintaining wild fisheries as they are best suited to our environment and provide a much sought-after angling experience. The wild brown trout fisheries of yingina / Great Lake, Arthurs Lake and Lake King William have traps to capture trout as they migrate upstream to spawn during late autumn and winter. Traps are used to monitor brown trout populations from these lakes. Some of the trapped fish are transferred to Assisted Fisheries with the remainder counted through and allowed to spawn upstream. The management of adult spawning fish is guided by the *Tasmanian Inland Recreational Fishery Management Plan 2018-28*.

Trapping has occurred at Liawenee Canal, yingina / Great Lake since the 1960's and has been the primary source of wild adult brown trout for stocking Assisted Fisheries. A trap at Sandbanks Creek, yingina / Great Lake became operational in 2015. At Arthurs Lake, a trap has been operating on Hydro Creek since the 1970's. In 2014 traps were built on Scotch Bobs and Tumbledown creeks for monitoring of the brown trout at Arthurs Lake. The trap on the River Derwent above Lake King William, built in 2016 became operational in 2017. has been an important source of additional adult brown trout.

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Brown Trout Spawning Run 2022

Trapping of the 2022 brown trout spawning run commenced on 1 May 2022 and finished on 4 August 2022 (see table 1). A total of 10,672 adult brown trout were transferred to waters across the state, a further 13,875 were released upstream of the traps to spawn.

Table 1. Wild adult brown trout caught in Central Highland fish traps in 2022

Trap	Number transferred	Number released above trap
Liawenee Canal – yingina / Great Lake	4,746	0
Sandbanks Creek – yingina / Great Lake	1,265	0
Tumbledown Creek – Arthurs Lake	1,332	9,344
Scotch Bobs Creek – Arthurs Lake	0	2,223
Hydro Creek – Arthurs Lake	550	2,300
River Derwent – Lake King William	2,779	8
Total	10,672	13,875

Table 2. Total number of wild adult brown trout caught in Central Highland fish traps in the past 5 years.

Trap	2022	2021	2020	2019	2018
Liawenee Canal -yingina / Great Lake Est. 2006	4,746	10,240	9,510	11,747	13,619
Sandbanks Creek – yingina / Great Lake Est. 2015	1,265	2,077	1,105	1,718	1,671
Tumbledown Creek – Arthurs Lake Est. 2014	10,676	8,850	6,243	3,098	4,128
Scotch Bobs Creek – Arthurs Lake Est. 2014	2,223	3,438	1,703	798	753
Hydro Creek – Arthurs Lake Est. 2017	2,850	2,651	2,135	826	1,280
Derwent River - Lake King William Est. 2016	2,787	6,265	0	10,663	9,102
Total	24,547	33,521	20,696	17,115	30,553

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Liawenee Canal – yingina / Great Lake

The trap was opened 1 May and closed 20 July. Low water levels in Lake Augusta saw a limited flow down Liawenee Canal until the start of May, delaying the start of the spawning run by a month (see figure 1.). Most fish were captured in May. This coincided with dropping water temperature (see figure 2.). The trap caught 4,746 brown trout which is less than half of the five-year average catch.

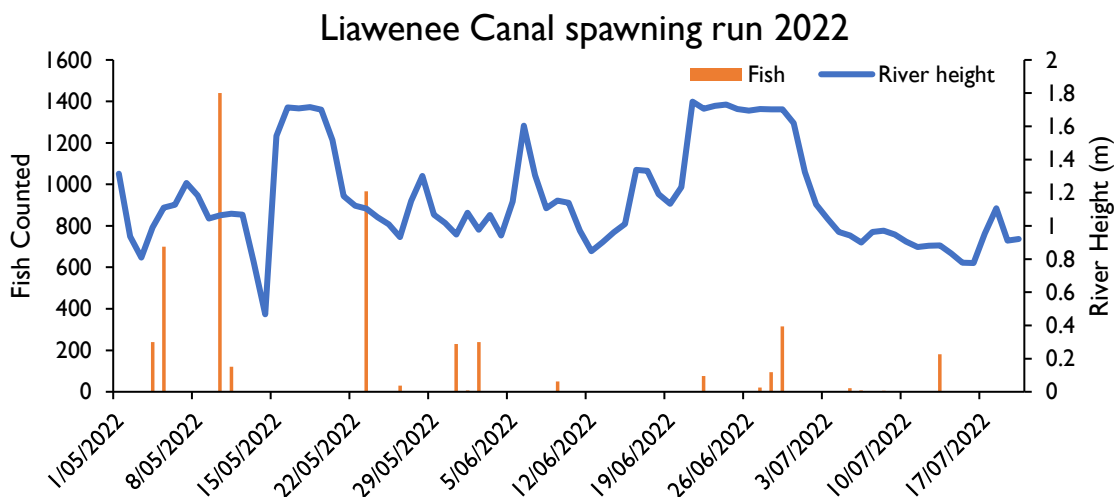


Figure 1. Number of brown trout captured in the trap (counted when they are removed from the trap) and river height for Liawenee Canal fish trap, May to July 2022.

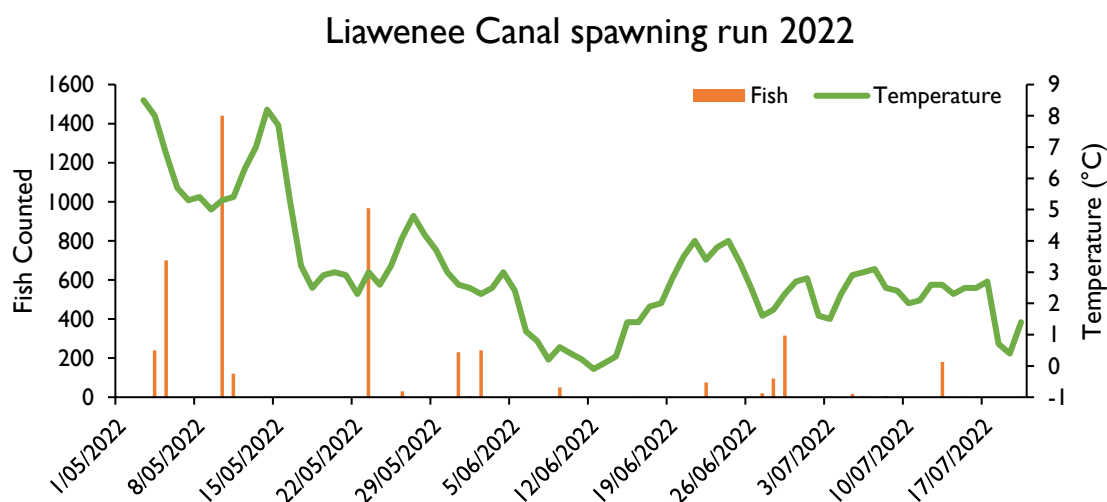


Figure 2. Number of brown trout captured in the trap (counted when they are removed from the trap) and water temperature for Liawenee Canal fish trap, May to July 2022.

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Sandbanks Creek – yingina / Great Lake

The Sandbanks Creek trap was opened on 2 May and closed 11 July. Fish steadily entered the trap until the end of June when the run slowed. The trap caught 1,265 brown trout. The catch was slightly below the average of the last five years.

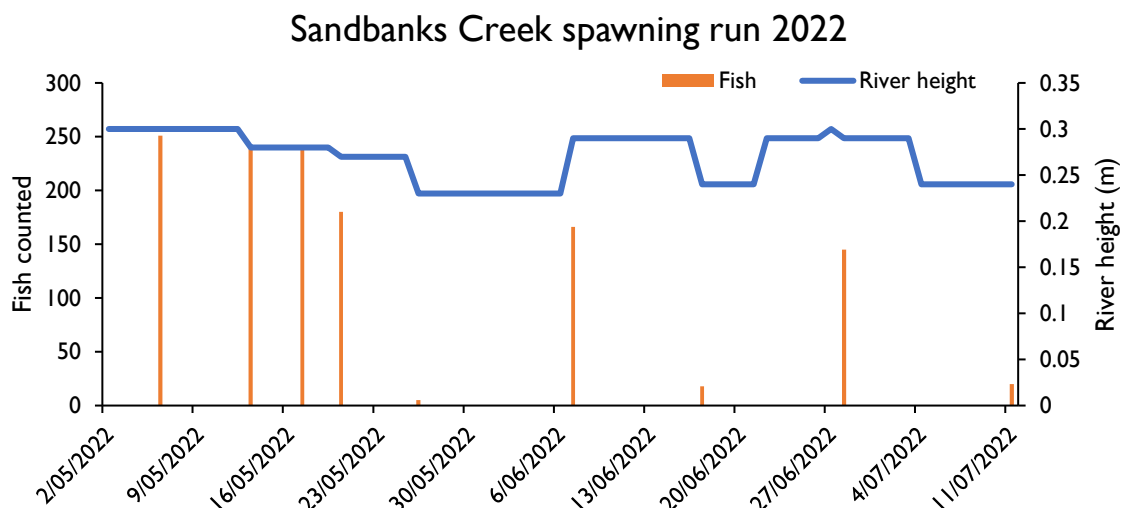


Figure 3. Number of brown trout captured (counted when they are removed from the trap) and river height for Sandbanks Creek fish trap, May to July 2022.

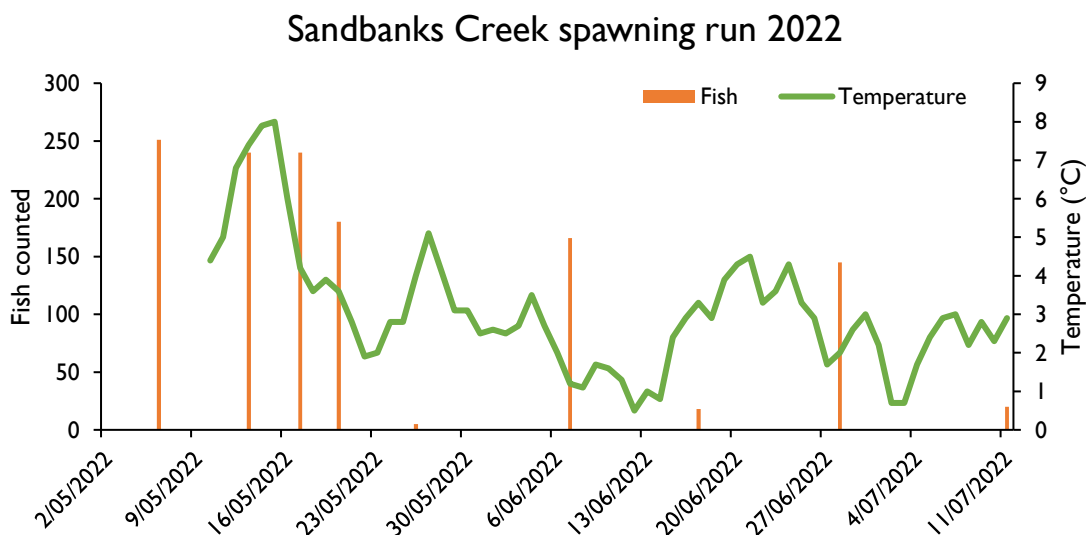


Figure 4. Number of brown trout captured (counted when they are removed from the trap) and water temperature for Sandbanks Creek fish trap, May to July 2022.

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Hydro Creek – Arthurs Lake

The Hydro Creek trap was opened on 10 May and closed on 4 August. The run peaked later than Scotch Bobs and Tumbledown creeks with most fish being captured in July. A water height of 300 mm or greater, saw more fish move into the trap. The trap caught 2,850 brown trout. This was the most fish caught there in the last five years.

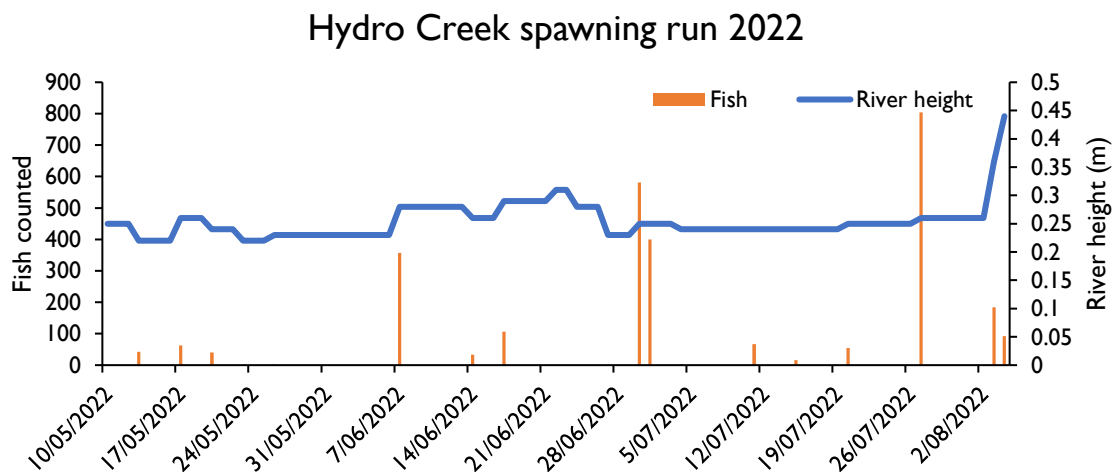


Figure 5. Number of brown trout captured (counted when they are removed from the trap) and river height for Hydro Creek fish trap, May to August 2022.

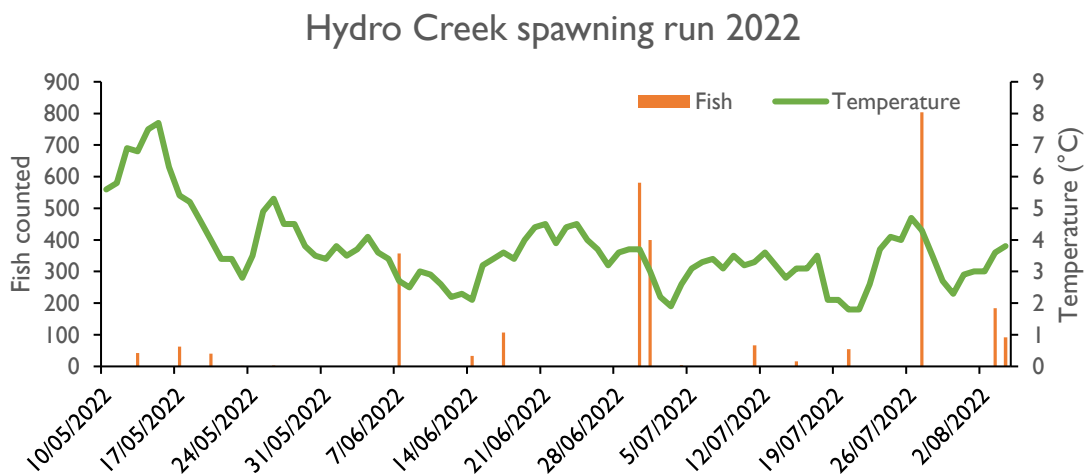


Figure 6. Number of brown trout captured (counted when they are removed from the trap) and water temperature for Hydro Creek fish trap, May to August 2022.

Scotch Bobs Creek – Arthurs Lake

The Scotch Bobs Creek trap was opened on 10 May and closed on 4 August. The run peaked on 24 June with 892 fish caught. The trap caught 2,223 brown trout. This catch was the second most caught in the last five years.

Scotch Bobs spawning run 2022

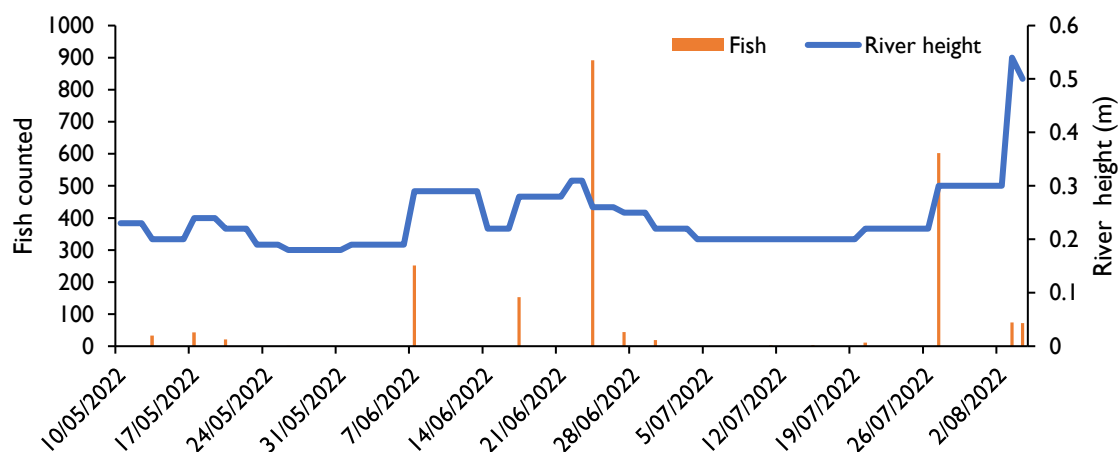


Figure 7. Number of brown trout captured (counted when they are removed from the trap) and river height for Scotch Bobs Creek fish trap, May to August 2022.

Scotch Bobs spawning run 2022

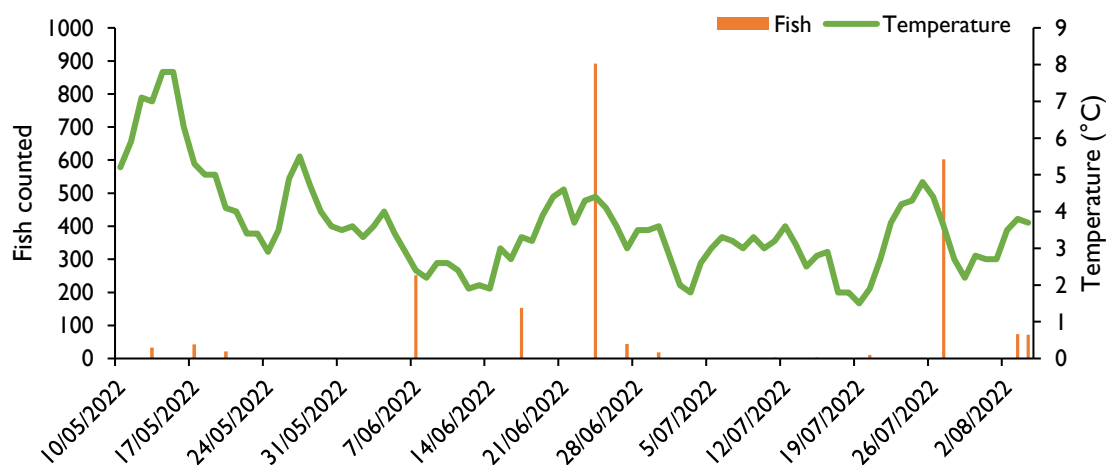


Figure 8. Number of brown trout captured (counted when they are removed from the trap) and water temperature for Scotch Bobs Creek fish trap, May to August 2022.

Tumbledown Creek – Arthurs Lake

The Tumbledown Creek trap was opened from 2 May and closed on 4 August. The peak of the run occurred on 6 June with 1,905 fish captured. The trap caught 10,676 brown trout. This was the most caught in the last five years.

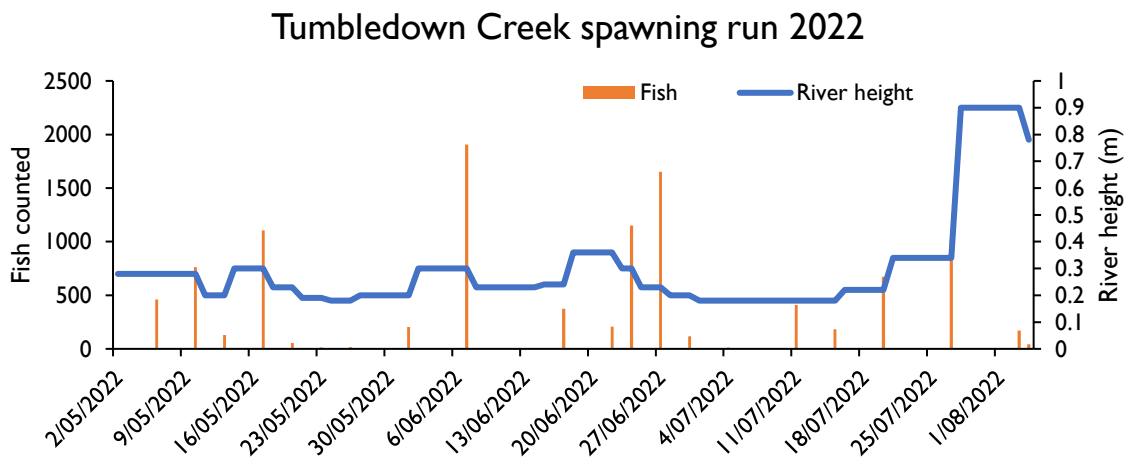


Figure 9. Number of brown trout captured (counted when they are removed from the trap) and river height for Tumbledown Creek fish trap, May to August 2022.

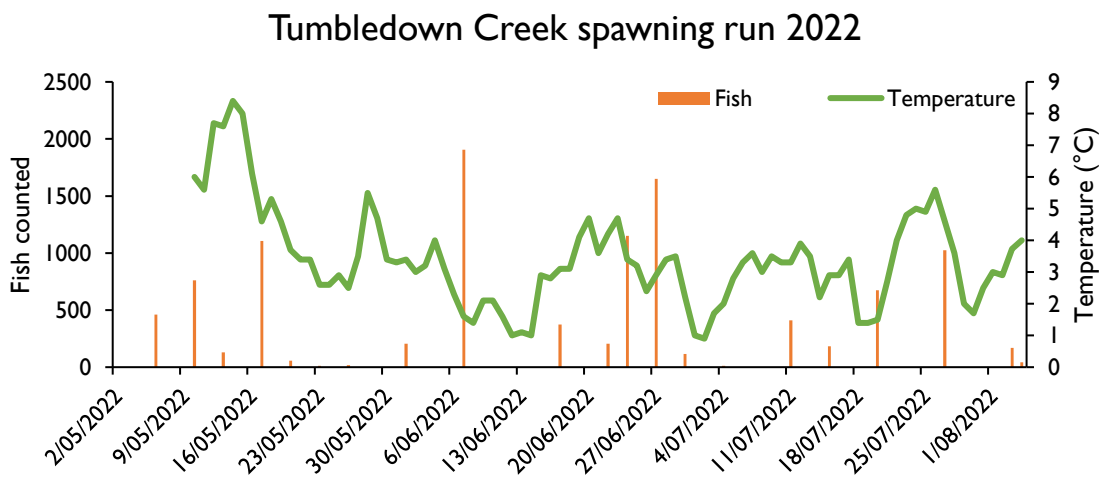


Figure 10. Number of brown trout captured (counted when they are removed from the trap) and water temperature for Tumbledown Creek fish trap, May to August 2022.

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River Derwent – Lake King William

The River Derwent trap was opened on 3 May and closed on 18 July. Lake King William was around nine metres below full supply (BFS) when the trap was installed. The lake level fell to 13.5 metres BFS by the start of May, before filling back up to nine metres BFS when the trap was closed. The trap caught 488 brown trout. There was no clear peak due to low catches throughout the spawning run. However, most fish were caught in mid-May.

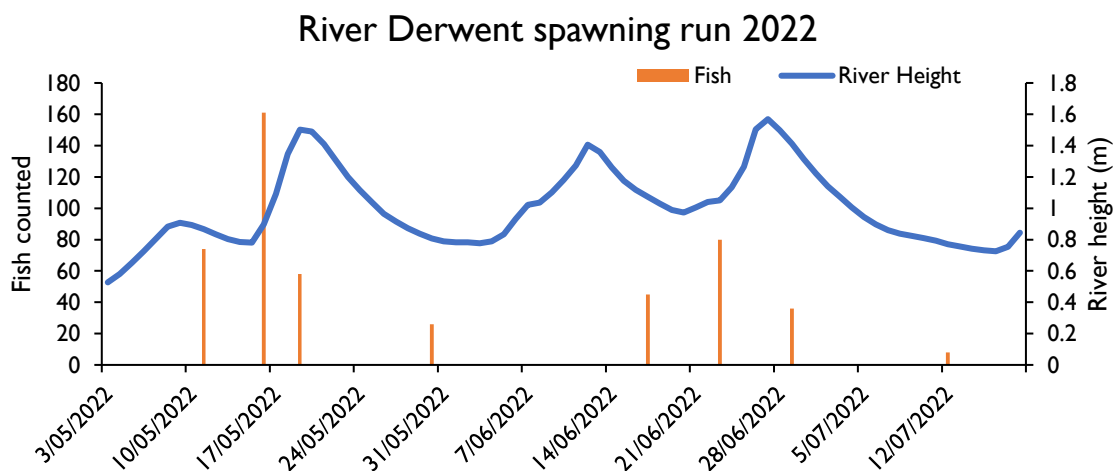


Figure 11. Number of brown trout captured (counted when they are removed from the trap) and river height for River Derwent fish trap, May to July 2022.

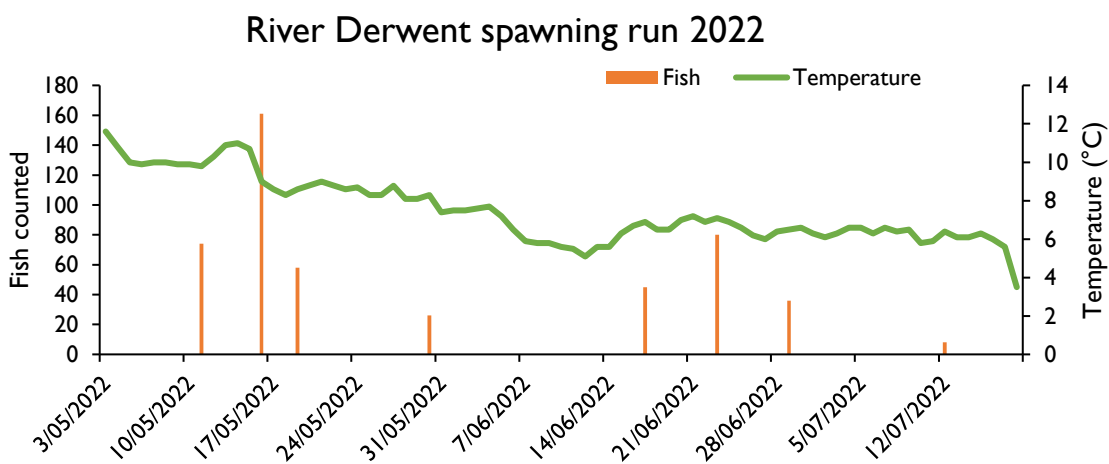


Figure 12. Number of brown trout captured (counted when they are removed from the trap) and water temperature for River Derwent fish trap, May to July 2022.

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The trap was reopened on 31 August and closed 31 October for the rainbow trout spawning run. During this time, the lake was sitting at around six metres BFS. A total of 2,299 brown trout were captured over these two months. These fish were likely river residents or Lake King William residents migrating between the river and the lake, as they were not in spawning condition.

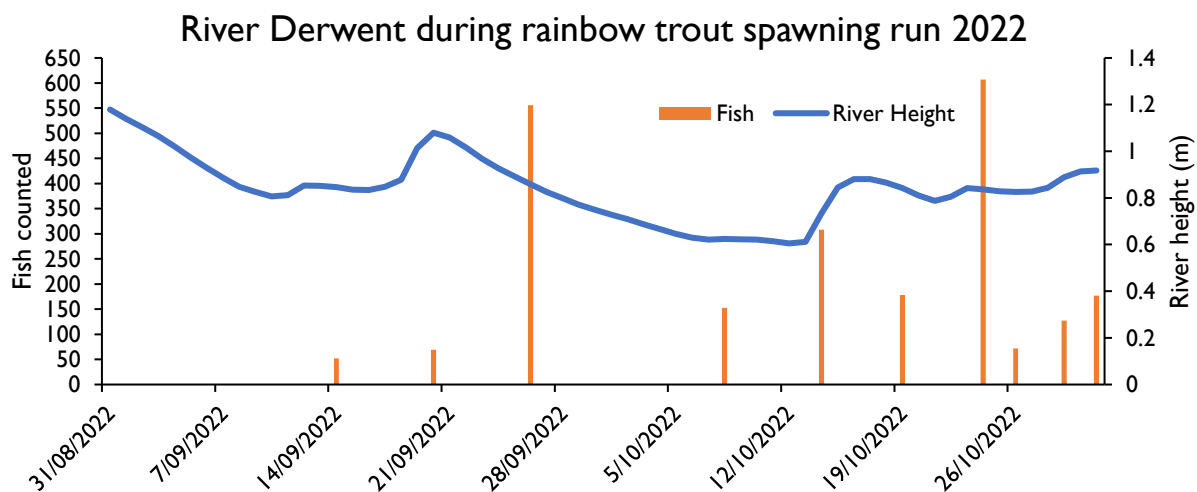


Figure 13. Number of brown trout captured (counted when they are removed from the trap) and river height for River Derwent fish trap, September to October 2022.

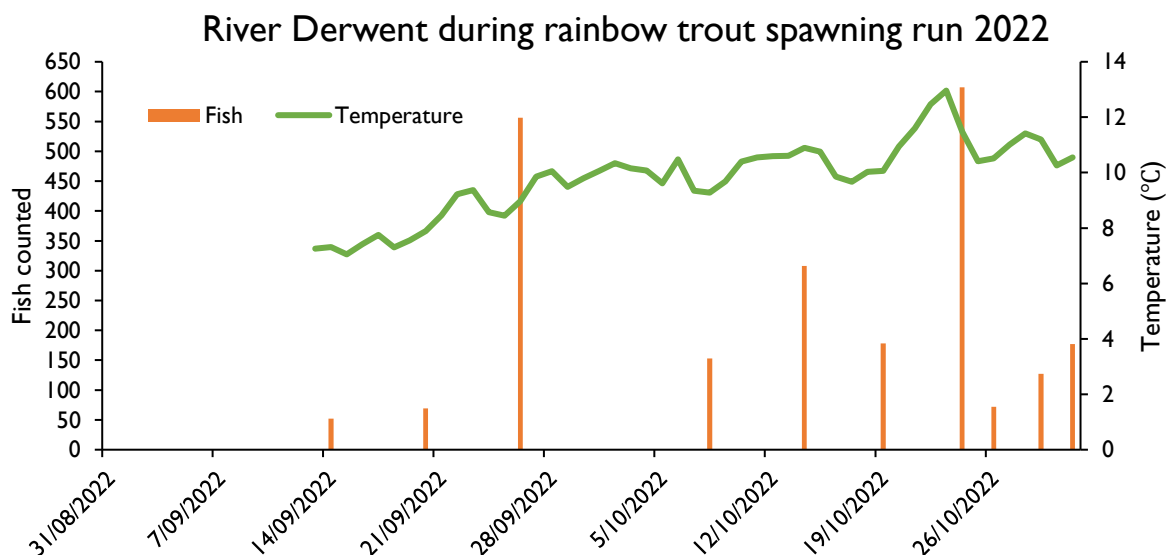


Figure 14. Number of brown trout captured (counted when they are removed from the trap) and water temperature for River Derwent fish trap, September to October 2022.

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Weigh and Measure – Brown Trout

At least 100 males and 100 females were weighed and measured from each trap. Often, the weigh and measure took place over several days to achieve the sample of 200 fish.

Due to the low number of fish being caught in the River Derwent trap, a sample representative of the spawning run was unable to be examined for a weigh and measure.

Spawning fish sizes 2022

Table 3. Summary of weigh and measure sample results for each trap in 2022.

Trap	Weight Range	Average Weight (g)	Length Range (mm)	Average Length
Liawenee Canal – yingina / Great Lake	130 - 1,620	926	242 - 519	431
Sandbanks Creek – yingina / Great Lake	230 - 1,530	810	267 - 505	413
Tumbledown Creek – Arthurs Lake	130 - 1,340	636	239 - 520	392
Scotch Bobs Creek – Arthurs Lake	160 - 1,370	701	242 - 499	401
Hydro Creek – Arthurs Lake	150 - 1,210	623	225 - 490	379
Derwent River – Lake King William	-	-	-	-

Liawenee Canal – yingina / Great Lake weigh and measure results

Table 4. Summary of weigh and measure sample at Liawenee Canal in 2022.

Grouping	Measurement	Mean	Minimum	Maximum
All fish n=200	Length (mm)	431	242	519
	Weight (g)	926	130	1,620
	Condition factor	1.13	0.723	1.42
Male n=100	Length (mm)	451	242	519
	Weight (g)	996	130	1,620
	Condition factor	1.06	0.72	1.33
Female n=100	Length (mm)	412	341	510
	Weight (g)	856	450	1,580
	Condition factor	1.21	0.87	1.42

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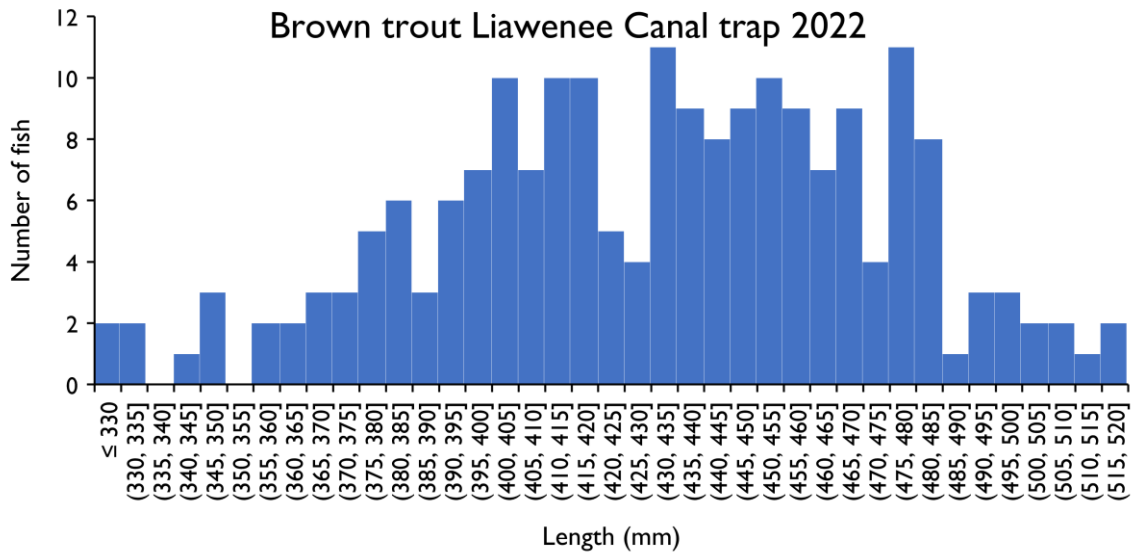


Figure 15. Length frequency histogram of fish sampled at Liawenee Canal in 2022.

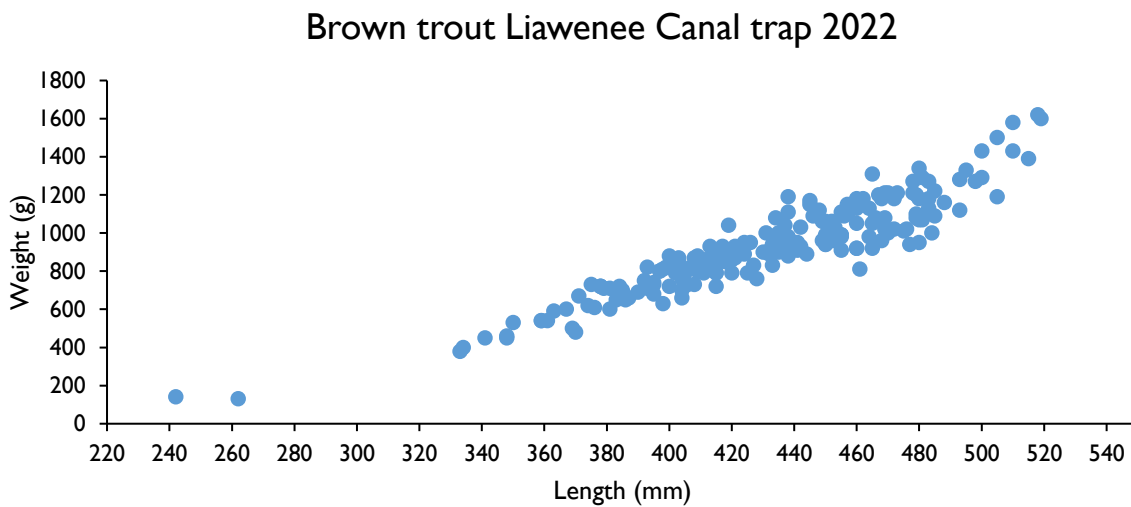


Figure 16. Length vs weight of fish sampled at Liawenee Canal in 2022.

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Sandbanks Creek – yingina / Great Lake weigh and measure results

Table 5. Summary of weigh and measure sample at Sandbanks Creek in 2022.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n=200	Length (mm)	413	267	505
	Weight (g)	810	230	1,530
	Condition factor	1.14	0.53	1.77
Male n=100	Length (mm)	423	267	505
	Weight (g)	847	230	1,530
	Condition factor	1.10	0.53	1.50
Female n=100	Length (mm)	404	340	482
	Weight (g)	774	370	1,060
	Condition factor	1.17	0.81	1.77

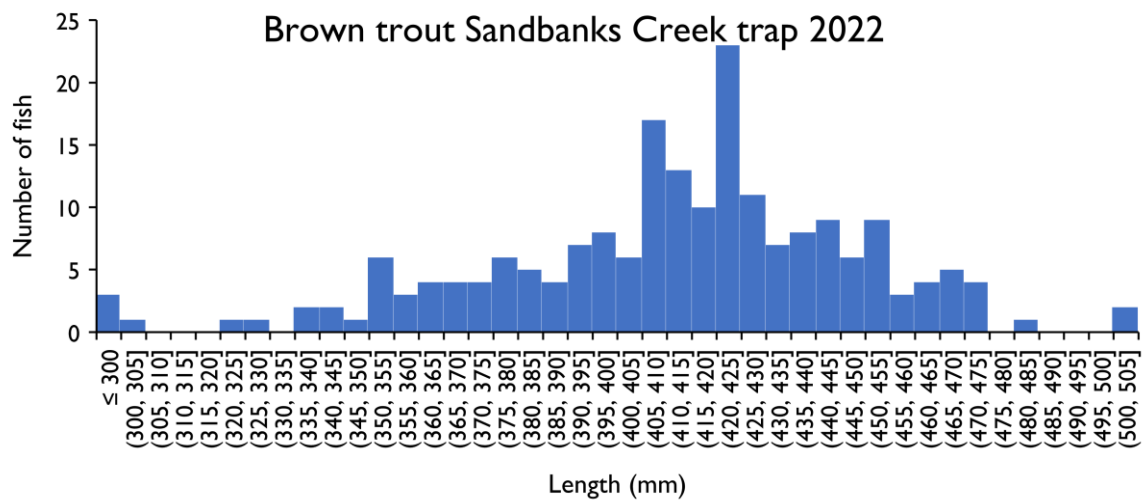


Figure 17. Length frequency histogram of fish sampled at Sandbanks Creek in 2022.

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Brown trout Sandbanks Creek trap 2022

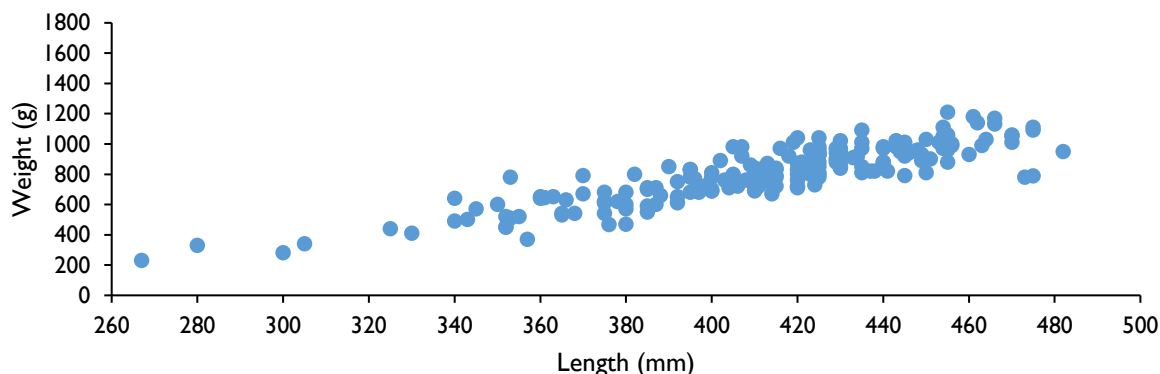


Figure 18. Length vs weight of fish sampled at Sandbanks Creek in 2022.

Tumbledown Creek – Arthurs Lake weigh and measure results

Table 6. Summary of weigh and measure sample at Tumbledown Creek 2022.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n=200	Length (mm)	392	239	520
	Weight (g)	636	130	1,340
	Condition factor	1.03	0.80	1.25
Male n=100	Length (mm)	403	239	520
	Weight (g)	669	130	1,340
	Condition factor	0.99	0.80	1.23
Female n=100	Length (mm)	382	320	470
	Weight (g)	603	330	1,050
	Condition factor	1.06	0.94	1.25

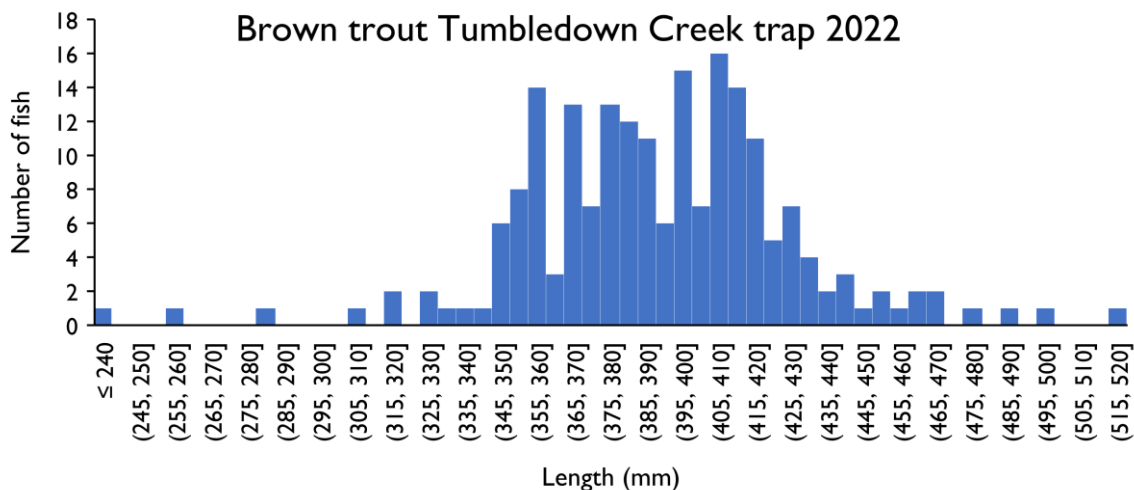


Figure 19. Length frequency histogram of fish sample at Tumbledown Creek in 2022.

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Brown trout Tumbledown Creek trap 2022

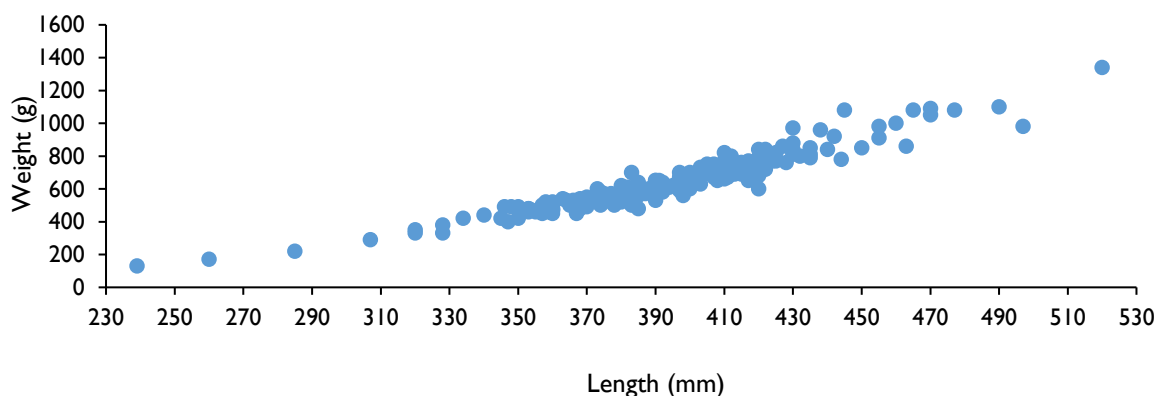


Figure 20. Length vs weight of fish sample at Tumbledown Creek in 2022.

Scotch Bobs Creek - Arthurs Lake weigh and measure results

Table 7. Summary of measurements taken during the weigh and measure at Scotch Bobs Creek 2022.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n=200	Length (mm)	401	242	499
	Weight (g)	701	160	1,370
	Condition factor	1.06	0.78	1.29
Male n=100	Length (mm)	410	242	499
	Weight (g)	748	160	1,370
	Condition factor	1.04	0.78	1.27
Female n=100	Length (mm)	391	333	470
	Weight (g)	653	350	1,070
	Condition factor	1.08	0.88	1.29

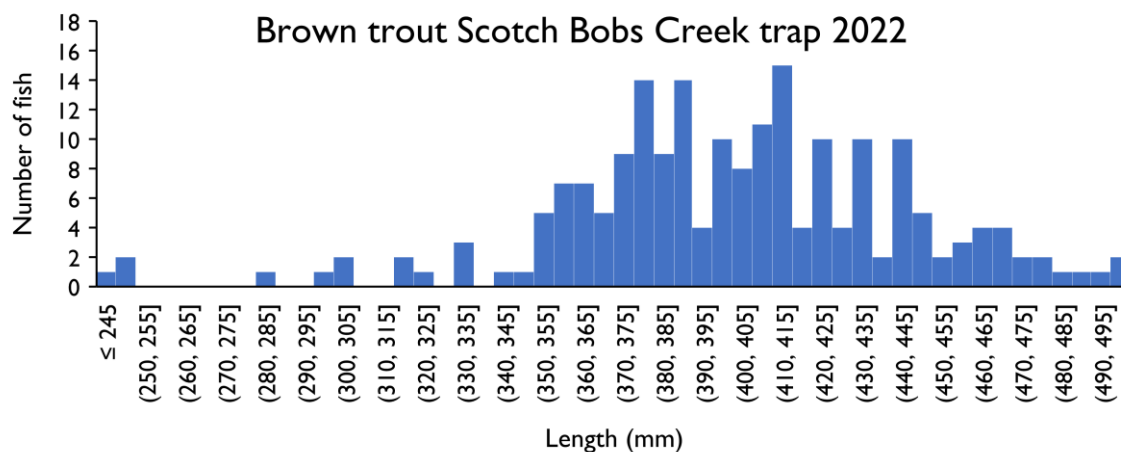


Figure 21. Length frequency histogram of fish sample at Scotch Bobs Creek in 2022.

Brown trout Scotch Bobs Creek trap 2022

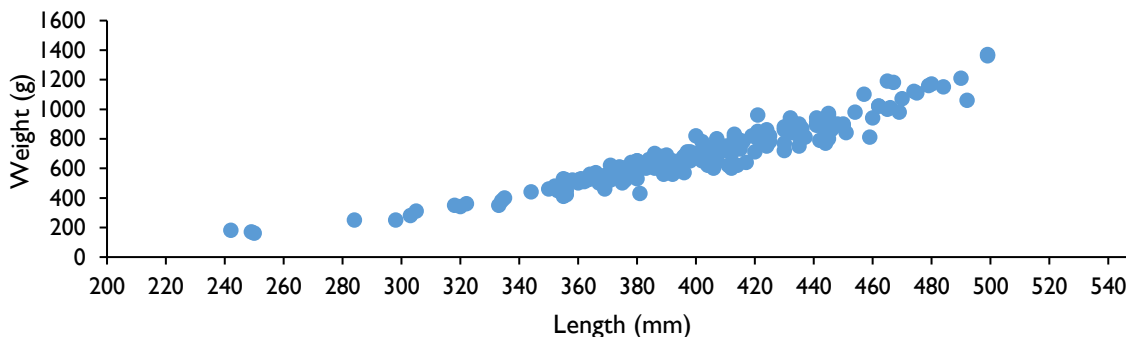


Figure 22. Length vs weight of fish sample at Scotch Bobs Creek in 2022.

Hydro Creek - Arthurs Lake weigh and measure results

Table 8. Summary of weigh and measure sample at Hydro Creek in 2022.

Grouping	Measurement	Mean	Minimum	Maximum
All Trout n=200	Length (mm)	379	225	490
	Weight (g)	623	150	1,210
	Condition factor	1.11	0.75	1.90
Male n=100	Length (mm)	375	225	490
	Weight (g)	623	150	1,210
	Condition factor	1.12	0.75	1.90
Female n=100	Length (mm)	382	320	440
	Weight (g)	623	270	1,100
	Condition factor	1.10	0.78	1.51

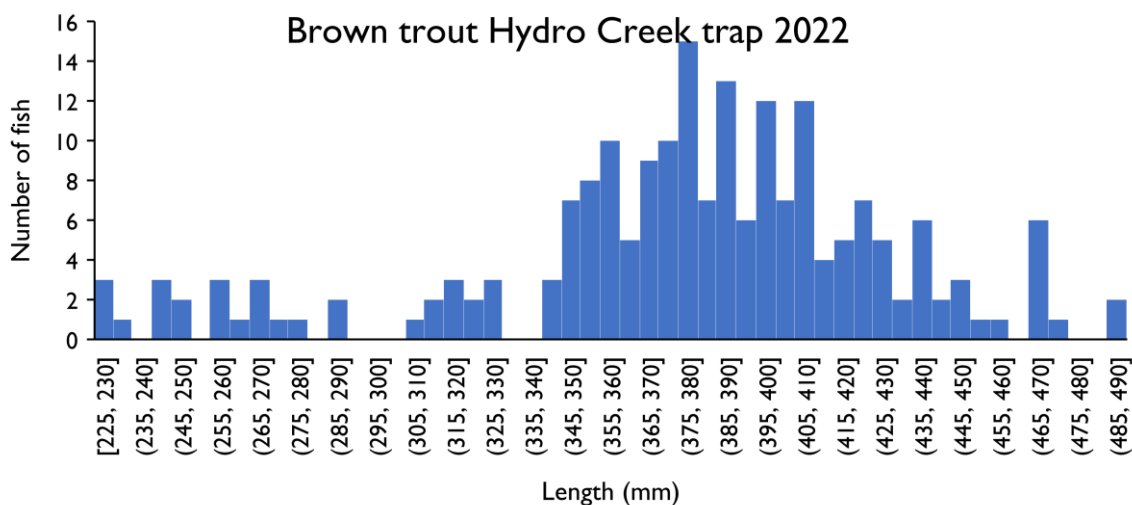


Figure 23. Length frequency histogram of fish sample at Hydro Creek in 2022

Brown trout Hydro Creek trap 2022

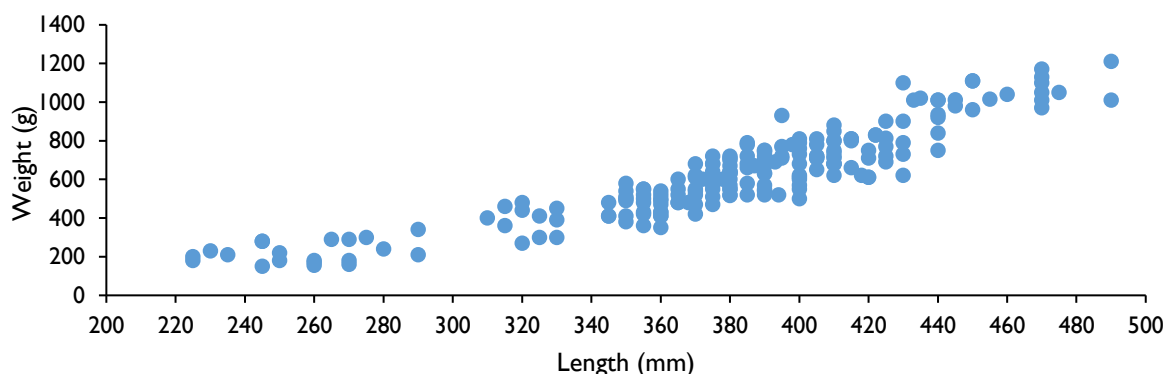


Figure 24. Length vs weight of fish sample at Hydro Creek in 2022

Derwent River – Lake King William weigh and measure results

Due to the low number of fish caught in the River Derwent – King William trap, a weigh and measure sample was not taken in 2022. Of the 488 fish that were captured from May to July this year the majority were small, either juvenile river residents or spent females in poor condition after spawning.

Ova Collection and Hatchery Production

200,000 ova were stripped from brown trout trapped at Liawenee Canal, yingina / Great Lake. These were incubated at the New Norfolk hatchery. Once at eyed stage, the ova were transferred into troughs at the Salmon Ponds for hatching and rearing.

A further 75,000 ova stripped from brown trout trapped at Liawenee Canal yingina / Great Lake and were sold to the South Australian Fly Fishers Association.

Trap History

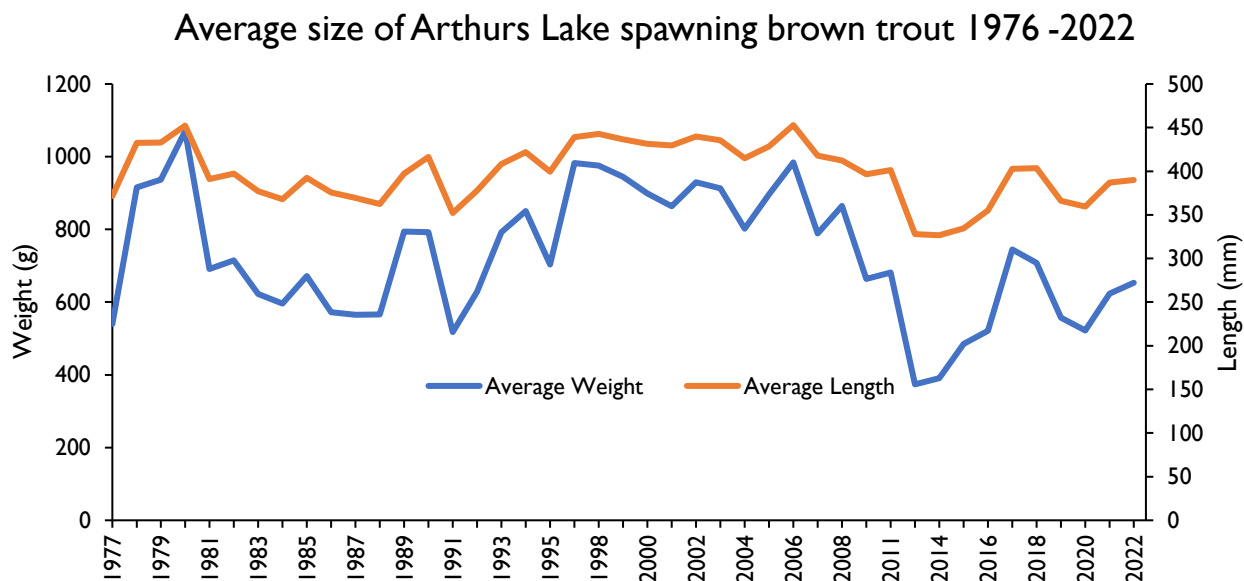


Figure 25. Average length and weight of spawning brown trout from Hydro Creek trap at Arthurs Lake since 1977. Note the data includes the three Arthurs Lakes traps combined from 2020.

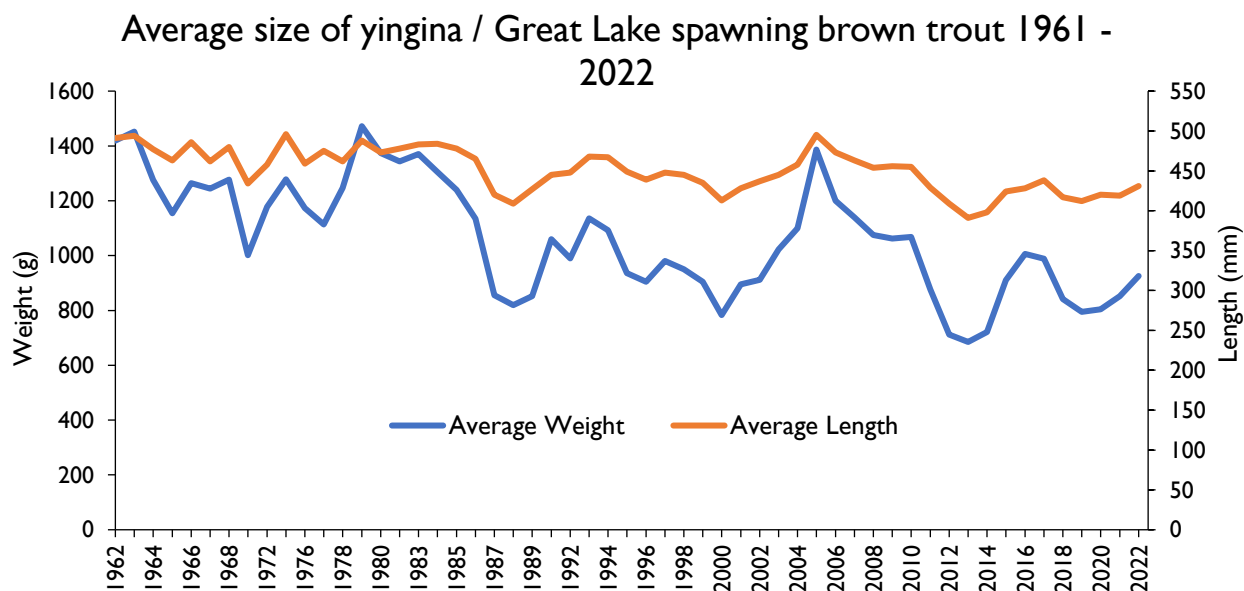


Figure 26. Average length and weight of spawning brown trout from the Liawenee Canal trap at Great Lake since 1962.

Conclusion/discussion

The number of spawning brown trout caught in the Liawenee Canal trap was far fewer in 2022 (<50%) than for each of the previous five years. The low water flow in Liawenee Canal during early May meant that fewer fish were drawn up to the trap than normally seen at that time of year. During 2021, most fish were trapped before mid-May when there was a higher water flow than during 2022.

The distance from yingina / Great Lake to the Liawenee Canal trap at the current lake level provides extensive spawning habitat downstream of the trap. Without sufficient water flow to encourage fish to move upstream it is likely that many trout spawned before they reached the trap.

The number of brown trout captured during spawning months (May – July) in 2022 at the River Derwent – Lake King William trap was much less than previous years. The trout caught in the trap were not in spawning condition and therefore not part of a spawning run.

The large distance from Lake King William to the River Derwent trap during May to June 2022 meant that there was extensive spawning habitat downstream. Brown trout migrating upstream from Lake King William had plenty of opportunity to spawn before reaching the River Derwent trap. This may explain the failure to catch the spawning run of brown trout at the trap during 2022.

The River Derwent trap in 2022 still caught brown trout during the rainbow trout spawning run. Most fish moved to other fisheries from the trap during 2022 were after the brown trout spawning period. The operation of the trap is dictated by Lake King William levels, and this has prevented the operation of the trap during the rainbow trout spawning run in previous years.

Recommendations

- *Liaise with Hydro Tasmania to ensure that water releases from Lake Augusta after 1 April, can be maintained for the duration of the brown trout spawning run.*
- *Collect fertilised ova at the first available opportunity. Resulting in the ability to stock out brown trout fry earlier in the year (by October/November).*
- *Open the River Derwent trap at Lake King William when the lake is between nine and six metres below full supply. With water in this band of lake depths, the trap should be opened during May for a June peak and continue to operate till the end of October.*